

REMARKS

In the Office Action, the Examiner rejected claims 1-4, 7, 12-14, 18, 22-29, 32, 36-45, and 47-56. The claims have been amended to further clarify the subject matter regarded as the invention to further expedite prosecution of the pending claims. Applicant reserves the right to reintroduce claims of the same or similar scope in a subsequent continuation application. The claim rejections are fully traversed below. Claims 1-4, 7, 12-14, 18, 22-29, 32, 36-45, and 47-56 remain pending.

Reconsideration of the application is respectfully requested.

REJECTION OF CLAIMS UNDER 35 USC §103

In the Office Action, the Examiner rejected claims 1-4, 7, 12-14, 18, 22-26, 32, 37-38, 41-45, and 47-55 under 35 USC §103 as being unpatentable over Inoue et al, U.S. Publication Number 2002/0186688 A1 ('Inoue' hereinafter) in view of Grob et al, U.S. Patent No. 6,894,994 B1 ('Grob' hereinafter). This rejection is fully traversed below in view of the above claim amendments.

As described in the Background section of Applicant's specification, the Mobile IP Management Information Base (MIB) defines a set of variables that can be examined or configured by a manager station. This accounting information is typically stored on the corresponding network device (e.g., Home Agent or Foreign Agent) and therefore each network device may be periodically examined by the manager station. In other words, storage and updating of accounting information is typically dispersed among the network devices rather than stored at a centralized server. Although this information may be periodically polled by the manager station, this process is not dynamically performed (e.g., by a Home Agent or Foreign Agent). Moreover, such variables have not been implemented for the purposes of billing users associated with these mobile nodes. See Background section, pp. 3-4. Accordingly, the lack of centralization of accounting information in a Mobile IP

environment typically requires substantial administrative overhead to poll the appropriate network devices (e.g., Home Agents or Foreign Agents).

In accordance with various embodiments of the invention as claimed in claim 1, an accounting request is sent to a centralized server by a network device (e.g., Home Agent or a Foreign Agent) to update accounting information associated with a mobile node. Since this information is centralized, it is possible to generate bills for a mobile node using the accounting information. The cited art, separately or in combination, neither discloses nor suggests the claimed invention. For instance, the cited art neither discloses nor suggests the use of a server that can receive accounting requests from various network devices (e.g., Home Agents and/or Foreign Agents) in order to record accounting information associated with various mobile nodes. As recited in claim 1, the accounting request indicates a request to update accounting information associated with the mobile node using a counter identified in the accounting request. Neither of the cited references discloses or suggests the sending or receiving of an accounting request. Moreover, neither of the cited references, separately or in combination, discloses or suggests the problem of administrative overhead resulting from a distributed system in which accounting information is stored among multiple network devices.

It is important to note that, through the claimed invention, accounting information may be collected as a mobile node roams during a single Mobile IP session. Specifically, as recited in claim 1, the sending of an accounting request by a network device (e.g., Home Agent or Foreign Agent) is performed in response to a trigger event, where the trigger event is a lapse of a predetermined period of time, initiation or termination of a registration of the mobile node, or when a number of packets are received or sent by the mobile node. In other words, the trigger event is independent from the initiation (e.g. logon) or termination (e.g., log off) of a session. Stated another way, the claimed invention enables accounting information to be collected during a session.

The Examiner cites Inoue as the primary reference. However, Inoue fails to disclose or suggest the sending of an accounting request, as claimed. Specifically, Inoue fails to disclose the updating of accounting information using a counter provided in an accounting request, where the accounting request indicates a request to update accounting information associated with the mobile node using the counter. Rather, the Examiner cites page 6, section [0111]. However, this section merely refers to authentication. In fact, section [0110]

clearly refers to a user authentication request message rather than an accounting request. The authentication request fails to indicate a request to update accounting information associated with the mobile node using a counter specified in the request, as claimed. Moreover, the authentication request message is sent to the mobile node, rather than to a server associated with the mobile node.

While Grob does disclose a RADIUS server, Grob fails to cure the deficiencies of the primary reference. It is also important to note that Grob fails to disclose such a server that is capable of receiving accounting information from a plurality of network devices, where each of the network devices is a Home Agent or Foreign Agent.

In view of the above, the combination of the cited references would fail to achieve the desired result. Specifically, combining the cited references would merely result in a system supporting authentication of mobile nodes using an authentication request message. The sending of the authentication message of Inoue would fail to enable accounting information associated with a mobile node to be updated. Therefore, the combination of the cited references would be inoperable for the intended purpose. Accordingly, Applicant respectfully submits that claims 1-4, 7, 12-14, 18, 22-26, 32, 37-38, 41-45, and 47-55 are patentable over the cited references.

The Examiner rejected claims 27-28, 36, 39-40, and 56 under 35 USC §103 as being unpatentable over Short et al, U.S. Patent No. 6,636,894 B1 ('Short' hereinafter) in view of Inoue et al, U.S. Publication Number 2002/0186688 A1 ('Inoue' hereinafter). This rejection is fully traversed below in view of the above claim amendments.

It is important to note that Short's system is not a system operating under the Mobile IP Protocol. While billing may be performed for nodes that are not mobile, such methods may not be easily applied to mobile nodes operating under the Mobile IP Protocol. For instance, billing is often performed through the use of time stamps for nodes that are not mobile. For a node that is not mobile, this method is acceptable since only two time stamps, a START time stamp and a STOP time stamp for a given session, are required to determine a total service time. However, in a Mobile IP environment, each mobile node may roam to numerous Foreign Agents while communicating with a given corresponding node. The Home Agent (or access point) would therefore only see some of the packets associated with a

session between the mobile node and the corresponding node. Thus, it may not know exactly when a session starts and stops.

Short merely discloses redirection to a portal page upon specific default occurrences, such as a time out, or according to preset time. See col. 11, lines 37-43. The user may customize the information that is provided in the portal page, such as an alarm clock counter to ensure that an appointment is met. See col. 11, lines 43-64. However, there is no mention of a counter associated with a mobile node's activity during a session. The only counter disclosed in col. 11, lines 51-64 of Short is an alarm clock counter, as set forth above. An alarm clock counter cannot be construed to be a counter associated with a mobile node's activity during a session. As such, the combination of the cited references would fail to operate for the intended purpose (e.g., performing accounting in a Mobile IP environment).

In addition, as set forth above, Short does not disclose a Mobile IP system (e.g., enabling a mobile node to roam while maintaining connectivity to its Home Agent). In fact, Short implies that a user must login from the user's new location (e.g., see col. 8, lines 64-67), rather than allowing a user to maintain connectivity in a previously established connection as the user roams to or from a location. In addition, col. 11, lines 51-64.

Short does disclose that "[t]he portal page may also comprise information related to the status of the current network session. By way of example, this information may include, current billing structure data, the category/level of service that the user has chosen, the bandwidth being provided to the user, the bytes of information currently sent or received, the current status of network connection(s) and the duration of the existing connection(s)." See col. 10, lines 20-27. However, as set forth above, the system disclosed in Short is not a Mobile IP system. In other words, it is unclear how this information would be updated in a Mobile IP system, as claimed. Rather, col. 11, lines 44-60 disclose the customization of such information by a user, administrator, or network operator, not transmitting a request packet, as claimed. Thus, Short teaches away from the claimed invention. Short does not disclose providing this information in a counter of such a request packet, nor does Short disclose the sending entities of this counter (e.g., Home Agents, Foreign Agents, etc) or receiving entity. Thus, Short fails to disclose or suggest maintaining and updating accounting information in the manner claimed during a Mobile IP session for a Mobile Node.

While Inoue does generally disclose a Mobile IP system, Inoue fails to cure the deficiencies of Short. Accordingly, the combination of the cited references would fail to

operate for the intended purpose (e.g., to maintain accounting information in a Mobile IP environment).

The Examiner rejected claim 29 under 35 USC §103 as being unpatentable over Short et al, U.S. Patent No. 6,636,894 B1 ('Short' hereinafter) in view of Inoue et al, U.S. Publication Number 2002/0186688 A1 ('Inoue' hereinafter) in further view of Grob et al, U.S. Patent No. 6,894,994 B1 ('Grob' hereinafter). This rejection is fully traversed below.

Grob fails to cure the deficiencies of the primary references. The Examiner cites col. 9 of Grob. However, Applicant was unable to find any reference to billing or the generation of a bill. More specifically, there was no reference to generation of a bill from accounting information as claimed. Accordingly, Applicant respectfully submits that claim 29 is patentable over the cited references.

The claimed invention enables an accounting request to be sent under various circumstances (e.g., after a specific number of packets have been sent or received by a mobile node) where the accounting request includes at least one counter, indicating at least one of a number of packets or bytes sent or received by the mobile node, or a total service time. In this manner, a bill may be generated for this period of time or amount of information transmitted.

The dependent claims depend from one of the independent claims and are therefore patentable over the admitted prior art in view of the cited art for at least the same reasons. However, the dependent claims recite additional limitations that further distinguish them from the cited references. Hence, it is submitted that the dependent claims are patentable over the cited art.

Based on the foregoing, it is submitted that the independent claims are patentable over the cited references. In addition, it is submitted that the dependent claims are also patentable for at least the same reasons. The additional limitations recited in the independent claims or the dependent claims are not further discussed as the above-discussed limitations are clearly sufficient to distinguish the claimed invention from the cited references. Thus, it is respectfully requested that the Examiner withdraw the rejection of the claims under 35 USC §103(a).

SUMMARY

Reconsideration of the application and an early Notice of Allowance are earnestly solicited. If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for an extension of time which may be required to maintain the pendency of this case, and any required fee for such extension or any further fee required in connection with the filing of this Amendment is to be charged to Deposit Account No. 50-0388 (Order No. CISCPO77)

Respectfully submitted,

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